Interim Record of Decision
For the
Eagle Zinc Site
Operable Unit 1: Building Demolition

September 2009

Prepared by
U.S. Environmental Protection Agency
Region 5
Chicago, IL

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List of Acronyms

ACM – Asbestos Contaminated Material
ARAR – Applicable or Relevant and Appropriate Requirements
bgs – below ground surface
BTEX – Benzene, Toluene, Ethylbenzene, and Xylenes
CERCLA – Comprehensive Environmental, Response, Compensation and Liability Act
CERCLIS – CERCLA Information System
CFR – Code of Federal Regulations
COC – Chemical of Concern
ESI – Expanded Site Inspection
FEMA – Federal Emergency Management Agency
IAC – Illinois Administrative Code
IEPA – Illinois Environmental Protection Agency
ISGS – Illinois State Geological Survey
ISWS – Illinois State Water Survey
LUST – Leaking Underground Storage Tank
msl – mean sea level
NCP – National Oil and Hazardous Substances Pollution Contingency Plan
NPDES – National Pollutant Discharge Elimination System
O&M – Operation and Maintenance
OU – Operable Unit
PA – Preliminary Assessment
PCB – Polychlorinated Biphenyls
ppm – parts per million
PRG – Preliminary Remediation Goal
PRP – Potentially Responsible Party
RCRA – Resource Conservation and Recovery Act
RI/FS – Remedial Investigation/Feasibility Study
ROD – Record of Decision
SWPPP – Storm Water Pollution Prevention Plan
TACO – Tiered Approach to Corrective Action Objectives
TCL – Target Compound List
TCLP – Toxicity Characteristic Leaching Procedure
U.S. EPA – U.S. Environmental Protection Agency
XRF - X-ray Fluorescence

Part 1: The Declaration for the Record of Decision

1.0 Site Name and Location

Eagle Zinc site (EZS) is located in the northeast sector of Hillsboro, Illinois, approximately 50 miles northeast of St Louis, Missouri. According to the 2000 census, Hillsboro has approximately 5,500 citizens. The site is in a mixed commercial/industrial/residential area. A residential area is only about 100-feet southwest of the site. The site was historically used for oxide production, zinc smelting and related operations for about 90 years, until 2003. The property encompasses approximately 132 acres, on which there are about 30 acres of buildings. The site has been divided into two operable units (OUs): OU 1 addresses the interim remedial action concerning the contaminated buildings, while, OU 2 addresses the contamination at the entire site. The buildings (OU 1) are the focus of this interim Record of Decision (ROD). The site's National Superfund Database identification number is ILD980606941.

2.0 Statement of Basis and Purpose

This decision document presents the Selected Interim Remedy for EZS, which was chosen in accordance with the Comprehensive Environmental, Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. § 9601 *et seq.* and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision is based on the Administrative Record file for this operable unit. The Administrative Record Index identifies each of the items comprising the Administrative Record upon which the selection of the interim remedial action is based.

The State of Illinois has indicated its intention to concur with the selected remedy. The State's Letter of Concurrence will be added to the Administrative Record upon receipt.

3.0 Assessment of Site

The response action selected in this interim ROD is necessary to protect the public health, welfare, or the environment from actual or threatened releases of hazardous substances into the environment. Such releases or threat of releases may present an imminent and substantial endangerment to public health, welfare, or the environment.

4.0 Description of Selected Remedy

The selected interim remedy addresses the high levels of lead contamination and associates risks to human health and the environment found on and in the buildings of EZS. The selected remedy includes:

- **Building Demolition:** The demolition of all buildings on-site, including manufacturing buildings, office buildings and laboratories;
- **Off-site disposal of Asbestos Containing Materials and Putrescible Wastes:** Proper off-site disposal of asbestos containing materials and putrescible wastes;

- **Recycling**: Recycling of steel, metal, bricks and other recyclable materials. Any material eligible for recycling will be decontaminated to a level of contamination acceptable to the recycling facility;
- **On-site Management Cell with Soil Cover**: Consolidation of demolition debris and a one-foot soil cover will be placed on-site to temporarily manage the consolidated debris. The vegetative portion of the soil cover will use native grasses, which will require limited maintenance; and
- **Management of Wastes**: All non-hazardous waste will be managed onsite under the one-foot soil cover. Any hazardous waste will be placed on-site managed consistent with Resource Conservation and Recovery Act waste pile requirements and incorporated into the final remedial action.

The final remedial action at the site will address remaining media and will be addressed under Operable Unit 2 (OU-2) of the Eagle Zinc site.

5.0 Statutory Determinations

This interim action is protective of human health and the environment in the short term and will provide adequate protection until a final remedy is implemented; it complies with those federal and state requirements that are applicable or relevant and appropriate for this limited-scope action; and it is cost effective. This action is an interim solution and provides for appropriate use of permanent solutions and alternative treatment (or source recovery) technologies. The selected interim remedy provides for recycling of contaminated materials to the extent practicable and interim steps to reduce the mobility of leachable contaminants. This interim action does not address principal threat waste. There is a statutory preference for remedies that employ treatment of principal threat waste that reduces toxicity, mobility, or volume as a principal component. The final response action will address principal threat waste in accordance with the statutory preference (40 C.F.R 300.430). Subsequent actions will fully address the threats posed by the site. Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted to ensure that the remedy continues to provide adequate protection of human health and the environment every five years after commencement of the remedial action. Because this is an interim ROD, review of this site and remedy will be ongoing as EPA continues to develop remedial alternatives for the remaining contamination on-site.

6.0 ROD Data Certification Checklist

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for this site.

- Chemicals of concern (COCs) and their respective concentrations (See **Section 2**).
- Risk presented by the COCs. A baseline risk assessment was not conducted for this interim action due to the immediate need to take action. However, **Section 7** summarizes the risks associated with the buildings (OU 1).
- Whether source materials constituting principal threats are found at the site (See **Section 11**).

- Cleanup levels established for the COCs and the basis for these levels. Cleanup levels are not appropriate for this interim remedy, which is demolition and an on-site waste management cell as well as recycling. The site cleanup levels will be determined in the final selected remedy.
- Current and future land use assumptions used in the baseline risk assessment and ROD (See **Section 6**).
- Potential land and ground water use that will be available at the site as a result of the Selected Remedy. As a result of the selected interim remedy there will not be any change from current land use. However, **Section 6** describes the potential for land use after the completion of the final remedial action.
- Estimated capital, annual operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected (See **Section 13**).
- Key factors that led to selecting this interim remedy (See **Section 10**).

7.0 Authorizing Signature

Richard C. Karl
Superfund Division
U.S. Environmental Protection Agency

9-16-09
Date

Part 2: Decision Summary

1.0 Site Name, Location, and Description

EZS (ILD980606941) is located in the Township of Hillsboro, Illinois. Hillsboro is located in central Montgomery County, Illinois, approximately 50 miles northeast of St. Louis, Missouri and 30 miles south of Springfield, Illinois. The site is approximately 132 acres and is defined as the parcels of land currently owned by T.L. Diamond & Co., Inc. The site is situated on two adjoining tracts of land in the Southeast quarter of Section 1 and the Northeast quarter of Section 12, Township 8 North, Range 4 West, as well as part of the Southwest quarter of Section 6, Township 8 North, Range 3 West of the 3rd Principal Meridian.

The site is in a mixed commercial/industrial/residential area in the northeastern part of Hillsboro. The site extends from Smith Road south to an unnamed tributary to the Middle Fork of Shoal Creek. Industrial Drive extends north and south along much of the eastern property boundary. North of the site is Smith Road. The nearest residential properties are located approximately 100 feet west of the site.

It is estimated that between 25 and 30 percent of the site is covered by buildings. Approximately 23 buildings currently exist at the site. The types of buildings formerly used for facility operations include the office/laboratory building, manufacturing /processing buildings, equipment/raw material/finished product storage buildings, bag houses, and maintenance facilities. These buildings are the focus of this interim ROD.

Other site features include former railroad spurs, residual material stockpiles, two storm water detention ponds, a small pond in the southeast corner of the property, a large pond in the southwest, intermittent streams, wetland area on the west and north sides, woodlands to the north and northeast areas, and several paved and unpaved roadways.

Active industrial operations at the site ceased in 2003. The site is zoned for commercial and industrial use, and local officials have indicated that there are no plans to re-zone the property for other uses. A restrictive covenant on the site property also limits the use of the property to commercial/industrial activities. The City of Hillsboro Planning Commission confirmed in 2003 its recommendation that the City of Hillsboro acquire the property for use as an industrial park. It is not certain whether or at what time such acquisition and redevelopment will occur.

U.S. Environmental Protection Agency (U.S. EPA) in consultation with the Illinois Environmental Protection Agency (IEPA) has decided to use a phased approach to facilitate the remedial action and quickly mitigate risks. Phase one utilized the emergency response authority pursuant to the Superfund law, called a removal action, which consisted of the installation of a fence around the most accessible areas of the site. This action was completed in January of 2009. The second phase (OU 1), the focus of this interim ROD, addresses the contaminated buildings and associated structures on-site.

The third phase (OU 2) of the remedial action will address the remaining contamination (including the remaining demolition materials) on the 132-acre property.

The U.S.EPA is the lead agency for this site and the IEPA is the support agency.

2.0 Site History and Enforcement Activities

2.1 Site History

Operational History

Zinc processing operations began at the site in 1912, at which time the facility operated as a zinc smelter under the name Lanyon Zinc Company. The smelting products included zinc and sulfuric acid. The site was purchased by Eagle-Picher Industries in 1919. Eagle-Picher conducted zinc smelting and manufacture of sulfuric acid until approximately 1935. Sometime after 1919, and most likely during the early 1920s, the manufacture of zinc oxide and leaded zinc oxide commenced at the site. The leaded zinc oxide was manufactured by combining basic lead sulfate with zinc oxide. Additional details on the leaded zinc oxide operation are currently unavailable; however, these activities ceased around 1958. Eagle-Picher continued to manufacture zinc oxide at the site until November 1980, at which time the site was purchased by The Sherwin-Williams Company (Sherwin-Williams). Sherwin-Williams continued zinc oxide manufacturing operations at the site until it sold the plant in 1984 to Eagle Zinc Company, a division of T.L. Diamond & Company. Eagle Zinc continued manufacturing zinc oxide using the process employed by Sherwin-Williams and Eagle-Picher.

Zinc oxide was manufactured at the site using both direct and indirect processes. The indirect process involved the processing of zinc metal in a muffle furnace. The direct process, which was used until the plant closed in early 2003, involved the processing of zinc ores and stockpiled furnace residues in a rotary kiln furnace. While it is likely that Eagle-Picher, Sherwin-Williams and Eagle Zinc Company all used the direct process, only Eagle-Picher and Sherwin-Williams used the indirect process (muffle furnace). Residual materials historically generated by the manufacturing operations have included, among other things, rotary kiln residue, muffle dross, metallic zinc particles, and refractory bricks from the facility's furnaces. Zinc oxide is used in many applications, including the paint and ceramics industries, agricultural products, rubber products and cosmetics. Other products historically manufactured at the site include leaded zinc oxide (Eagle-Picher), metallic zinc (Eagle Zinc Company), and sulfuric acid (Eagle-Picher). Sulfuric acid was reportedly manufactured at the site by roasting zinc sulfide to remove the sulfur. The southwest surface water pond was used to provide non-contact cooling water for the process.

In addition, Eagle Zinc Company produced a fine-grained product that is rich in carbon by screening stockpiled rotary residues using a rotary screen and other processes. The pyrometallurgical process known as the American process involved mixing zinc bearing feedstock with sized anthracite coal in the mix room. The coal was delivered to the site by railcar; the zinc ore was delivered to the site by railcar and truck. The plant closed in early 2003.

Site Investigations

Several environmental investigations were conducted on plant property and in adjacent land areas, off of the manufacturing property since the early 1980s, and before the initiation of the Remedial Investigation (RI) in 2001. At the time the RI began, the plant was still operating and the Remedial Investigation/Feasibility Study (RI/FS) was focused on the non-operating areas of the site. Eagle-Picher, Sherwin-Williams, and Eagle Zinc completed a draft RI in 2005 and will be finalized as part of the final remedial response.

The data generated by the investigations prior to the completion of the draft RI/FS were summarized in the Preliminary Site Evaluation Report. Comparison of the data with site-specific background data and regional background values were used to preliminarily identify Contaminants of Concern (COCs) and potential areas of concern. The early investigations are described below.

Expanded Site Inspection 1993:

The Expanded Site Inspection (ESI) conducted by IEPA in October 1993 included the collection of 18 soil samples (within the top four inches), eight sediment samples, and two residue pile samples – all with corresponding background samples. The soil samples were collected at onsite and off-site locations. The sediment samples were taken on-site and off-site in the eastern and western drainage ways. The ESI determined that the site did not require a time-critical or non time-critical removal action, and that the site did not pose an immediate threat to human health or the environment.

1998 and 2001 Sampling:

IEPA collected 68 samples from on-site residue piles and 44 soil samples with six split samples in May 1998. These samples were analyzed for lead and cadmium, with select samples analyzed for Toxicity Characteristic Leaching Procedure (TCLP) lead and TCLP cadmium. Lead and cadmium both exceeded the TACO Tier 1 Soil Remediation Objectives for the soil and were designated as potential COCs.

In June 1998, pursuant to the Interim Consent Order, between the Illinois Attorney General, IEPA, and the Eagle Zinc Company, flush and composite storm water samples were collected from Outfall 001 and Outfall 002 and analyzed for metals and other inorganic parameters. These samples were collected prior to the installation of an engineered storm water retention basin to capture storm water before being discharged to the eastern drainage-way.

In December 1998, ground water samples from nine shallow on-site monitoring wells were collected. The samples were split and analyzed for 35 IAC Part 620.410 inorganic and organic parameters. IEPA installed four monitoring wells in the area of a former 500-gallon gasoline Underground Storage Tank (UST) that exhibited evidence of leakage. The sampling results, which indicated no detectable benzene, toluene, ethyl benzene, and xylenes (or BTEX compounds), demonstrated that ground water has not been impacted.

Analytical results were obtained for several rounds of surface water samples collected from Lake Hillsboro by IEPA's Division of Public Water Supply between April and October 2001. The samples were collected from the area of the city's potable water intake, which is located near the dam for the reservoir, approximately one mile north of the site. The samples were analyzed for metals, pesticides, and certain inorganic and physical parameters. Many of the surface water samples taken exceeded the screening levels criteria for zinc, cadmium, and/or iron.

The Illinois Department of Public Health (IDPH) conducted a public health assessment in December 2002 using all existing data. They determined that the only contaminant significantly above background levels that could cause human health concerns was manganese. Even at those levels, the IDPH considered it a low potential threat due to the amount and duration of exposure. However, additional investigations, not considered in the public health consultation from IDPH, indicate that cadmium and lead contamination found in other media at the site may pose a threat. These contaminated media will be addressed the final remedial action.

ESI Addendum 2005:
IEPA personnel collected a total of 12 on-site waste pile samples, 21 off-site soil/cinder samples, and eight sediment samples along the drainage way to Lake Hillsboro. The waste piles, containing lead, cadmium, chromium and zinc, are considered the primary contaminant source at EZS; contamination of this form was found on over 35 acres of the property. The soil samples collected during this inspection reflected the contamination found in the source areas; the same contaminants were found and exceeded the removal action levels. The eight sediment samples taken exceeded the background concentrations and the Ontario Sediment thresholds; the samples consisted of benzo(b)flouranthene, benzo(g,h,l)perlyne, cadmium, lead, nickel, and zinc.

Summary of Investigations of Building Areas:
In reviewing the draft RI and FS, U.S. EPA and IEPA recognized that supplemental investigation was needed in and around the plant buildings since the plant was no longer operating.

IEPA completed X-ray Fluorescence (XRF) sampling over a three day period from April 30, 2008 though May 2, 2008 using a Niton Corporation XRF field based site characterization instrument. A total of 65 samples were collected at locations on the eastern third of the property. Approximately one half of the samples were collected inside of the buildings and the remaining samples were collected outside of the building structures. The depths of the outside samples were approximately one to two inches from the surface. Ten samples were also collected and submitted for confirmatory laboratory analysis of total metals and toxicity characteristic leaching procedure (TCLP) metal analysis. Most of the confirmatory samples taken were determined to be characteristically hazardous for lead. The highest concentration for lead was found at Sample ID#XRF-058 which detected lead at 56,576 ppm via the XRF. The location of this sample is in the central area between the building structures. Field sampling results were approximately two to five times lower than the laboratory analyses due to the

extremely high zinc concentrations being present in many of the samples, which likely masked higher actual lead concentration levels. Other metals reported include arsenic, zinc, copper, nickel, chromium, barium and cadmium.

About 70% of the samples collected within the building structures exceeded U.S. EPA's target screening level of 800 ppm, while 100% of the samples collected outside of the building structures exceeded the 800 ppm screening level. Results of the confirmatory sampling results were two to five times greater than the field XRF results. Nine of ten TCLP samples exceeded the 5 mg/l TCLP limit for lead so that some of the contaminated material would be handled consistent with RCRA hazardous waste requirements once separated from the non-hazardous waste. The majority of the samples taken inside the building were taken from the floors or higher flat surfaces. The actual building debris, although contaminated, is not likely to be classified as RCRA hazardous waste.

The lead screening level for industrial areas used for this sampling event was 800 ppm; consistent with U.S. EPA lead guidance (September 1989, OSWER Directive #9355.4-02) and U.S. EPA Region 9 recommended Preliminary Remediation Goals (PRGs). The screening level of 800 ppm for lead is an indicator of potentially unacceptable risks.

As part of the effort to quickly mitigate risk associated with the highly contaminated buildings and site soils, U.S EPA conducted a removal action in December 2008 through January 2009. The removal action consisted of fence installation around the most accessible areas of the site. About 2,150 feet of fencing and signage were installed between December 15, 2008 and January 9, 2009.

2.2 Enforcement Activities

In June 1981, the facility was initially listed in the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) as a discovery action initiated during Sherwin-Williams' ownership of the site. Sherwin-Williams filed the U.S. EPA form 8900-1, Notification of Hazardous Waste Site, in accordance with Section 103(c) of CERCLA, which indicated that slag had been disposed on the site property. A Preliminary Assessment (PA) of the site was conducted in 1984 by the IEPA pursuant to CERCLA, which culminated in the submission of a PA Report to U.S. EPA Region 5. Sampling of residual materials by IEPA in the early 1980s determined that the materials were not hazardous waste and the site was not therefore subject to Resource Conservation and Recovery Act (RCRA) permitting.

On December 31, 2001, Eagle-Picher, Sherwin-Williams and Eagle Zinc entered into an Administrative Order on Consent (AOC) with the U.S. EPA to conduct an RI/FS. Eagle-Picher later filed for bankruptcy; and T.L. Diamond ceased operations at the site and liquidated its assets.

In addition to the CERCLA activities described above, several sets of surface water samples were collected by the IEPA from the southwest storm water discharge between 1980 and 1982 and analyzed for metals. Detected concentrations of zinc, iron, lead and copper in the surface runoff above applicable state surface water quality standards, on

one or more occasions, resulted in a Notice of Violation to the owner from the IEPA. Subsequently Sherwin-Williams removed approximately 18,000 tons of residue materials from 10 acres of the site.

On May 22, 1998, Eagle Zinc Company entered into an Interim Consent Order with the Illinois Attorney General and IEPA, which contained an interim Site Plan for (1) preparation and submittal of a Storm Water Pollution Prevention Plan (SWPPP), (2) sampling of on-site materials, (3) sampling of storm water discharges, (4) development and implementation of a ground water monitoring plan, and (5) disposal of construction and demolition debris. Pursuant to the Interim Consent Order, installation and sampling of nine shallow monitoring wells was implemented. Sampling of residual piles and underlying soils was also conducted pursuant to the Interim Consent Order.

Based on the site's discharges of storm water from two point sources, the occurrence of regulated industrial activities at the site, and the facility's Standard Industrial Classification code, the site was determined to be subject to National Pollutant Discharge Elimination System (NPDES) storm water permitting requirements as per 40 CFR 122.26 (b)(14)(ii). A NPDES Notice of Intent was prepared by Eagle Zinc and submitted to the IEPA. On June 20, 2000, IEPA issued NPDES Permit No. IL0074519. The NPDES permit required: monthly monitoring of NPDES Outfall 002, preparation/implementation of a SWPPP, and submission of an annual inspection report to IEPA. A SWPPP was prepared for the site in December 2000. A storm water retention system, which consists of a two-cell retention basin, was completed in 2001. Following closure of the plant in early 2003, the IEPA issued a public notice of the termination of the facility's NPDES storm water permit on May 23, 2003, which stated that the facilities had closed and the discharge ceased.

The removal of a 500-gallon gasoline underground storage tank (UST) in April 1998 resulted in the reporting of a Leaking UST (LUST) incident to IEPA. To address the LUST incident, site classification and assessment activities were performed. Based on those results and discussions with IEPA, the LUST incident was classified as a low priority and ground water in the former tank area was monitored periodically for three years. As there were no detections of contaminants above applicable ground water standards, the IEPA issued a No Further Remediation letter for the former UST on August 31, 2004.

The AOC for the RI/FS between the U.S. EPA and the Potentially Responsible Parties (PRPs) was signed on December 31, 2001. The RI/FS began in early 2002. The RI and related reports were completed by the PRPs and initial reviews finished by the U.S. EPA and Illinois EPA in April 2006. The FS documents were submitted by the PRP and the related reviews completed in May 2006. Due to the IEPA's concerns with the PRPs FS documents, the Illinois EPA requested that the U.S. EPA take over the completion of the FS. The U.S. EPA tasked its contractor to provide two technical memoranda to supplement the PRPs' FS document.

The site was listed on the National Priorities List on September 19, 2007.

An Administrative Search Warrant was issued on April 17, 2008, to allow IEPA to inspect and evaluate the site's buildings and related structures for possible demolition and to collect waste material samples for contamination testing within and adjacent to the buildings.

In September 2008, U.S. EPA and T.L. Diamond & Co, Inc. and its President, Theodore L. Diamond, entered a cost recovery settlement in which U.S. EPA received $750,000 to help pay for the cleanup. U.S. EPA has also filed a Proof of Claim in the Eagle-Picher Bankruptcy to seek recovery of its costs, although Eagle-Picher has limited assets available to pay creditors.

3.0 Community Participation

The draft RI Report, the additional sampling results, the Proposed Plan, and other relevant documents for EZS in Hillsboro, Illinois, were made available to the public in May 2009. They can be found in the Administrative Record file at the Hillsboro Public Library, where an information repository has been set up. The notice of the availability of these documents was published in Journal News on May 18, 2009. A public comment period was held from May 18 to June 18, 2009. A public meeting was held on May 27, 2009 to present the Proposed Plan to community members. At this meeting, representatives from U.S. EPA and IEPA answered questions about problems at the site and the remedial alternatives; and solicited community input on the proposed remedy and reasonably anticipated future land use. U.S. EPA's response to the comments received during this period is included in the Responsiveness Summary, which is part of this Record of Decision.

4.0 Scope and Role of Operable Units

U.S. EPA has organized the work at the site into two operable units (OUs):

- Operable Unit 01: Building Demolition
- Operable Unit 02: Multi-media

This interim remedial action, referred to as OU 1, is intended to address high lead concentrations located on and in the buildings on the site. The selected remedy for this OU will neither be inconsistent with, nor preclude implementation of, the final remedy (OU 2).

OU 2 will address any contaminated media associated with the site and the materials left on-site from the interim remedial action. Both operable units will be implemented under the Superfund authority.

5.0 Site Characteristics

This section summarizes currently available information for the site. The major characteristics of the site and the nature and extent of contamination are discussed below. More detailed information is contained in the RI, which is available in the Administrative Record.

5.1 Physical Characteristics of the site

5.1.1 Local Meteorology

The following information on the climate of Hillsboro, Illinois was obtained from on-line sources of historical weather data. The climate of Montgomery County is considered continental and temperate. The summer months are hot and humid with an average temperature of 75° Fahrenheit (F) and an average daily high temperature of 87° F. The winter months are moderately cool with an average temperature of 31° F and an average daily high temperature of 40° F. Rainfall is well distributed throughout the year, with the highest average rainfall in May. Total annual precipitation for the area is approximately 41 inches. Approximately 57 percent, or 23 inches, of the total annual precipitation occurs as rain from April through September and coincides with the growing season. The average total snowfall accumulation is approximately 18 inches.

5.1.2 Surface Water Hydrology

The surface topography of the site is relatively level, with surface elevations ranging from about 600 feet above mean sea level (msl) at the southwest retention pond to about 635 feet above msl in the central portion of the site. The predominant topographic slope of the site is southerly. Three surface water ponds exist at the site: a southwestern storm water retention pond; an engineered storm water retention pond located near the eastern site property boundary; and a small pond located in the southeastern part of the site. The southwestern storm water pond receives a large proportion of the site's storm water runoff. Storm water intermittently discharges westward from this pond to a drainage swale, which in turn discharges to an unnamed tributary of the Middle Fork of Shoal Creek. This outfall was previously permitted with the IEPA's Division of Water Pollution Control as NPDES Outfall 001. The Middle Fork of Shoal Creek flows southwestward and joins Shoal Creek approximately six miles southwest of the site.

Storm water that originates in most of the manufacturing areas and the eastern part of the site enters an engineered storm water retention system located near the eastern property boundary. The storm water retention system includes a small concrete settlement structure and a two-cell, clay-lined retention pond. This system was designed to provide adequate detention time to clarify the water prior to discharge. Storm water generally evaporates from the retention basins, and was previously used as make-up water for the plant's non-contact cooling system. However, periodically, storm water discharges from the retention pond to a drainage swale (formerly designated as NPDES Outfall 002), which channels the storm water off the site property to the east. The drainage swale extending from Outfall 002 discharges to Lake Hillsboro, approximately 1/2-mile east of the site. Lake Hillsboro is a man-made reservoir, which discharges to the Middle Fork of Shoal Creek approximately one mile north of the site.

The southeastern pond is located between two railroad spurs near the entrance to the plant. This pond does not appear to receive storm water runoff and has no inlet or outlet. In addition to the drainage pathways noted above, storm water that collects in a limited area along the southern site boundary discharges to a small stream located south of the

site. This stream joins the drainage swale that originates at Outfall 001 just west of the southwest Site property line.

5.1.3 Site Geology

According to Illinois State Geological Survey (ISGS) publications, the site is located within the Central Lowland Physiographic Province of Illinois. Within this province, the site lies within the Springfield Plain Division of the Till Plains Section. This area is characterized by Pleistocene glacial till and outwash deposits derived from the Illinoisan Stage glacial episode. According to the map entitled *Thickness of Glacial Drift in Illinois* (ISGS, 1975), the site is underlain by between 50 and 100 feet of Pleistocene-age unconsolidated glacial deposits. The surface deposits in the area of the site consist of up to 5 feet of loess, which are wind-blown deposits generally consisting of silt. According to the map entitled *Quaternary Deposits of Illinois* (ISGS, 1979), the site is underlain by the Vandalia Member of the Glasford Formation. This unit consists of hard, compact sandy or silty till. According to maps contained in the document entitled *Potential for Contamination of Shallow Aquifers in Illinois* (ISGS, 1984), the geologic materials underlying the site are classified as Type E, which is described as "uniform, relatively impermeable silty or clayey till at least 50 feet thick, with no evidence of inter-bedded sand or gravel. This description is verified by soil boring and monitoring well installation logs prepared as part of a ground water investigation conducted at the site in November 1998 and as a part of the 2005 RI. In general, the soil boring logs (except in areas with thick deposits of historic plant residues) indicate that clay, silty clay and sandy clay extend to a depth of at least 15 feet below ground surface (bgs) throughout the site.

The glacial deposits are underlain by bedrock consisting of the Pennsylvanian-age Bond Formation. This unit is between 100 and 300 feet thick and predominantly consists of limestone, with some layers of shale and sandstone.

5.1.4 Site Hydrogeology

Shallow ground water contour maps were constructed using water level measurements taken in December 1998 and in March and June of 2003. Water level measurements were collected from all 13 on-site wells. The inferred shallow ground water flow direction generally varies across the site; southwestward in the southwest part of the site, to southward and southeastward in the northern and central portions of the site. Based on the ground surface elevations at the monitoring wells, the inferred pattern of shallow ground water flow generally reflects the site topography.

Slug tests indicated hydraulic conductivities in the shallow water-bearing zone that ranged from 1.11×10^{-4} centimeters per second (cm/sec) to 8.54×10^{-5} cm/sec. These measurements are within the ranges of hydraulic conductivity generally reported for both glacial till and loess. The IEPA's Department of Public Water Supply reported that no community water supply wells are located within 2,500 feet of the site boundaries. Several domestic wells were reported by the Illinois State Water Survey (ISWS) as being located within a one-mile radius of the site.

While the well searches indicated records of some older domestic wells located within a one-mile radius of the site, all residents of Hillsboro, as well as unincorporated areas located within one mile of the site, are provided with public water, which is obtained from Lake Hillsboro and Glen Shoals Lake.

According to a local ordinance, cross-connecting to a private, auxiliary or emergency water supply with public water supply is prohibited. According to the City's engineering firm, the prohibition of cross-connections would preclude the use of a separate domestic well water system within a household that is connected to the municipal water system. Although local officials have indicated that some older domestic wells may be used for non-potable outdoor purposes (e.g., watering lawns and gardens), it is unlikely that ingestion of water from these non-potable wells occurs, and there is no expectation that ground water resources will be developed for potable use in the foreseeable future.

5.1.5 Ecology

According to the National Wetland Inventory Map for Hillsboro, Illinois (U.S. Fish and Wildlife Service, 1988) the only mapped wetlands on the site property include the southwest retention pond and the small pond located in the southeast part of the site. These ponds are mapped as intermittently exposed palustrine wetlands with unconsolidated materials in diked or impounded areas. According to the Federal Emergency Management Agency (FEMA) Flood Hazard Boundary Map for Montgomery County, Illinois (1991), no portions of the site or the off-site areas planned for investigation are located within either a 500-year or 100-year flood zone.

6.0 Current and Potential Future Site and Resource Uses

6.1 Land Use

The site has been zoned industrial/commercial by the city and deed restrictions on the property limit future site use to industrial and commercial purposes. Those deed restrictions also prohibit interference with U.S. EPA selected remedial actions for the site. Local authorities have expressed significant interest in redeveloping the site for commercial/industrial use. Land surrounding the property consists of recreational and residential land use and such land uses are not anticipated to change.

6.2 Ground water Use

While there are records of some older domestic wells located within a one-mile radius of the site, all residents of Hillsboro, as well as unincorporated areas located within one mile of the site, are provided with public water. Also, the low yield of the potentially affected shallow aquifer makes its development as a potential water source very unlikely. Therefore, there is no intention to use the site ground water as a drinking water source. Ground water is not in the scope of this remedy and will be addressed as a part of the final remedial action.

6.3 Surface Water Use

Three surface water ponds exist at the site: a southwestern storm water retention pond; an engineered storm water retention pond located near the eastern Site property boundary;

and a small pond located in the southeastern part of the site. Currently the surface water on-site is not being used. Currently, there is not an anticipated future use for surface water.

7.0 Summary of Site Risks

7.1 Ecological Concerns

The focus of this interim remedial action is the demolition of the building on the property. All ecological risks associated with the site will be further evaluated and addressed in the final remedial action, OU2.

7.2 Risks Associated with the site buildings

The 2008 sampling event conducted by IEPA revealed that the on-site former manufacturing buildings and leftover materials inside of and immediately adjacent to the buildings contained levels of lead exceeding U.S. EPA industrial screening criteria. Potential risks exist for people coming into contact with these materials, such as trespassers. These buildings are in poor structural condition and there is a risk that the buildings will collapse as a result of deterioration or in a severe weather event. This presents both a physical site hazard, and a collapse would exacerbate the site contamination.

According to the Agency for Toxic Substances and Disease Registry (ATSDR), the effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system, both in adults and children. However, children under the age of seven are most at risk. Long-term exposure of adults can result in decreased performance of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people, and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant women, high levels of lead exposure may cause miscarriage and in men it can damage the organs responsible for sperm production.

7.3 Basis For Response Action

The spring 2008 sampling event revealed concentrations of lead as high as 56,576 ppm, which is more than an order of magnitude greater than the screening level of 800 parts per million (ppm) on the buildings and surrounding materials. A chain-linked fence has been installed to limit site access and exposure to contamination; however, it is not sufficient to prevent exposure to trespassers or future on-site workers. The physical state of the buildings suggests that they may soon fall by themselves, potentially creating new releases of hazardous substances and making the implementation of site cleanup more difficult. The current exposures, and the potential release of lead contamination from the building to the environment may present and imminent and substantial endangerment to the public health, welfare, or the environment.

8.0 Remedial Action Objectives

Based on the risks associated with the contaminated buildings at EZS, the following Remedial Action Objectives were identified for the Interim Remedial Action (OU 1):

- Control fugitive dust sources, access, tracking, and erosion of contaminants and
- Prevent or abate actual or potential exposure to nearby human populations or animals from hazardous substances located on and in the dilapidated buildings on-site.

Demolition of the buildings and segregation, consolidation and covering of the building materials will prevent exposure to the contamination found on and inside of the buildings. Such an action will sufficiently mitigate risk while the RI/FS for the final remedial action (OU 2) is completed and the final remedy is selected and implemented.

9.0 Description of Alternatives

This section provides a narrative summary of each alternative evaluated to address the high concentrations of lead in the building and associated structures at EZS. Investigation activities performed by IEPA in 2008 show that levels of lead at many locations in that area significantly exceed the Region 5 lead screening criteria. These high levels prompted immediate action; U.S. EPA performed a removal action in January 2009 to limit access and therefore exposure to the contaminated and dilapidated buildings. Further early remedial action was determined necessary to expedite prevention of human exposure to highly contaminated buildings. The following alternatives were evaluated and compared to address these buildings specifically.

Alternative 1 – No action

The "No Action" alternative represents a baseline against which the effectiveness of other alternatives can be compared. This alternative includes no action to abate the lead contamination on and in the buildings and associated structures. Implementation of a No Action alternative will not address the primary potential risk to human health. Potential exposure still exists through direct contact and through further releases if building structures collapse. In addition, a No Action alternative is unlikely to be effective or permanent in the long-term because it does not provide for any control of the contaminated buildings and associated materials. This alternative is readily implementable and there are no costs associated with its implementation.

Alternative 2 – Building Demolition with on-site consolidation and one-foot soil cover

- Building Demolition – All buildings and associated structures on-site will undergo controlled demolition. Although some of the office space and related structures may not contain significant levels of contamination, it would be more difficult, costly, and time consuming to attempt to demolish around them than to include them in the demolition plan.
- Off-site disposal of Asbestos Contaminated Material (ACM) and putrescible wastes – An asbestos survey will be conducted for all on-site buildings and any ACM and putrescible waste will be appropriately disposed of off-site.

- Recycling – Any salvageable material will be recycled or reused. Any material eligible for recycling (e.g., steel, metal and bricks) will be decontaminated or treated as necessary to the contamination concentration acceptable to the recycling facility. Waste water from decontamination activities will be appropriately managed and disposed of. Any proceeds from the salvage operations will be used to offset the cost of the remedy.
- On-site Consolidation – All remaining demolition debris will be consolidated and placed in the southwest corner of the site in a temporary on-site management cell. Any RCRA hazardous wastes will be identified and will be separated from non-hazardous waste before the non-hazardous wastes is consolidated in the on-site management cell. Hazardous wastes and non-hazardous wastes will be placed in segregated areas so they can be managed more efficiently in the final remedy.
- Soil Cover – A one-foot soil cover will act as a physical barrier to the contaminated building debris consolidated on-site. The vegetative portion of the soil cover will use native grasses and require limited maintenance.

Alternative 3 – Building Demolition with off-site disposal
This alternative includes building demolition and recycling of salvageable materials previously discussed in Alternative 2. Instead of temporary on-site consolidation with a soil cover while awaiting the final remedy, the remaining demolition debris would be addressed through:

- Off-Site Disposal – All demolition debris that cannot be recycled will be transported off-site to an appropriate off-site disposal facility.

10.0 Comparative Analysis of Alternatives

Section 121(b) (1) of CERCLA presents several factors that at a minimum U.S. EPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives. The purpose of this evaluation is to promote consistent identification of the relative advantages and disadvantages of each alternative, thereby guiding selection of remedies offering the most effective and efficient means of achieving site cleanup goals. While all nine criteria are important, they are weighed differently in the decision-making process depending on whether they evaluate protection of human health and the environment or compliance with Federal and State requirements, standards, criteria, and limitations (threshold criteria); consider technical or economic merits (primary balancing criteria); or involve the evaluation of non-U.S. EPA reviewers that may influence a U.S. EPA decision (modifying criteria).

10.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls and/or institutional controls.

Alternative 1, No Action, is not protective of human health or the environment because of ongoing unacceptable risk to trespassers, future land users, and the potential for releases from the levels of lead found in the deteriorating buildings. Alternatives 2 and 3 are

protective of human health and the environment. Alternative 2, building demolition, disposal of ACM and putrescible waste at a Subtitle D landfill, decontamination and recovery of scrap metal, and temporary storage of remaining building debris on-site, abates the potential risk to human health. Some contaminated materials are left on-site in a containment cell with a temporary cover, which prevents direct contact and controls runoff and infiltration. The materials in the containment cell would be incorporated into the final remedy which will address similar materials and contamination present on the rest of the site. Alternative 3 is also protective in that it disposes of all building debris and associated materials off-site, thus preventing direct contact exposures to these materials on-site.

10.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Section 121(d) of CERCLA requires that remedial action at CERCLA sites at least attain legally applicable or relevant and appropriate federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4). Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances found at a CERCLA site. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or State environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those State standards that are identified in a timely manner, and are more stringent than federal requirements, may be relevant and appropriate. Tables 2 and 3 in section 13.2 show the ARARs associated with this interim remedial action.

Compliance with ARARs addresses whether a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes or provides a basis for invoking a waiver.

Alternative 1 is compliant with ARARs. Alternatives 2 and 3 will be designed and implemented to meet all state and federal ARARs, related to waste characterization, decontamination, on-site preparation for transportation and disposal of contaminated material, and storm water/waste water and fugitive dust and asbestos management during demolition and consolidation activities. The scope of requirements that may be considered relevant and appropriate is influenced by the fact that OU 1 is specifically intended as an interim action rather than a permanent remedy. Alternatives 2 and 3 are compliant with ARARs.

10.3 Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over

time, once clean-up levels have been met. The criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

Long-term effectiveness will be addressed primarily through the final site remedy. This interim action is intended to contribute toward long-term effectiveness in a way that will be consistent with the final site remedy. Alternative 1 does not achieve or contribute to long-term effectiveness and permanence. Both Alternatives 2 and 3 will help achieve long-term effectiveness. Alternative 3 offers a greater current contribution to permanence of the remedy than Alternative 2 because it removes from the site all of the building debris that cannot be recycled as part of the interim remedy. Alternative 2 also contributes to long-term effectiveness and permanence by removing all recyclable materials, asbestos and putrescible waste. The remaining materials are consolidated in the area of contamination that will be the focus of the final site-wide remedy. This is an acceptable approach for an interim remedial action, and will assure that this material will be treated consistent with the approach taken for similar remaining contamination at the site. It may also allow for more efficiency and economies of scale by addressing all of this material simultaneously. The soil cover under Alternative 2 will require limited maintenance until the final remedy is implemented whereas Alternative 3 will not require maintenance.

10.4 Reduction in Toxicity, Mobility, and Volume Through Treatment

Reduction of toxicity, mobility, or volume thought treatment refers to the anticipated performance of the treatment technologies that may be include as part of a remedy.

Alternatives 2 and 3 partially reduce toxicity through the decontamination of materials to be sent off-site for reuse or recycling, with appropriate treatment and disposal of decontamination water. Also, a controlled demolition, which ensures continuous dust suppression, will prevent the possible future release of fugitive dust into the air in the event the buildings were to fall in an uncontrolled manner.

10.5 Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during construction and operation of the remedy until cleanup levels are achieved.

Alternative 1 has no construction so there are no construction-related impacts. Alternatives 2 and 3 may cause nuisance noise for nearby residents, and neighboring communities. Alternative 3 will require a large number of trucks to haul contaminated demolition materials off-site and thus would have a much more significant impact on the community. The number of truck trips off-site increases the opportunity for releases through spills or accidents. In addition, the physical hazards associated with truck traffic will be much greater under Alternative 3. Human health impacts to residents, neighboring communities and construction workers from airborne releases are not expected under either alternative because dust suppression techniques will be employed during demolition, loading, and hauling of the debris. Risks to the environment are not

expected under either alternative because erosion control techniques such as use of silt curtains will prevent excessive erosion-related impacts.

10.6 Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and material, administrative feasibility, and coordination with other governmental entities are also considered.

Alternative 1 does not require any implementation. Alternative 2 and 3 are very similar to implement as many of the tasks are common to both alternatives, e.g., demolition, decontamination of scrap metal, ACM identification and disposal. The logistics of on-site transport and consolidation (Alternative 2) are less complex and time-consuming than those for off-site transport and disposal (Alternative 3), but both are readily implemented with standard construction practices.

10.7 Cost

The estimate present worth costs for the alternatives, not including the No Action alternative, range from $3.87 million for Alternative 2 to $4.52 million for Alternative 3. Alternative 1 has no cost. Alternatives 2 and 3 have costs associated with demolition, transportation, and disposal. There are also moderate costs associated with the transportation, placement of top soil, and operation and maintenance for Alternative 2 after consolidation of the building debris on-site. Alternative 3 will require transportation and disposal costs associated with off-site disposal to a controlled landfill. Alternative 2 is about $650,000 less in present worth cost than Alternative 3.

10.8 State Acceptance

The IEPA has indicated its intention to concur with U.S. EPA's proposed remedy, Alternative 2. IEPA's concurrence letter will be added to the Administrative Record upon receipt.

10.9 Community Acceptance

This criterion evaluates whether the local community agrees with U.S. EPA's analyses and preferred alternative. Based on its communications and contacts with the community, although several commentors expressed a preference for Alternative 3 over Alternative 2, U.S. EPA believes the community would support either Alternative. The public comments are further described and evaluated in the Responsiveness Summary.

11.0 Principal Threat Waste

The NCP establishes an expectation that U.S. EPA will use treatment to address the principal threats posed by a site wherever practical. The principal threat concept is applied to the characterization of "source material" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contaminant to ground water, surface water or air, or acts as a source for direct exposure. U.S. EPA has defined principal threat wastes as those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

The building materials in the scope of this remedy are not considered principal threat wastes. However, waste piles found inside the buildings are considered principal threat waste as defined by the NCP because they are highly toxic materials that act as a source for direct exposure to significantly high concentrations of lead. To the extent that the materials exceed Toxicity Characteristic Leaching Procedure (TCLP) limits, they will be segregated and placed onsite, temporarily covered, and addressed as principal threat waste in the final remedial action.

12.0 Selected Remedy

12.1 Summary of Rationale for the Selected Remedy

The selected remedy is considered an interim remedial action for the site. This limited-scope action is intended only to address the contamination associated with the buildings, structures on-site and associated materials. A final response action to fully address the threats posed by EZS will be taken in OU2 upon completion of the Eagle Zinc RI/FS and any necessary supplemental evaluations.

The selected remedy, Alternative 2, provides the best balance of the nine NCP evaluation criteria, is congruent with the anticipated final remedial action, and utilizes green-remediation practices to the extent practicable. The green-remediation practices of the selected remedy include: the reuse and recycling of materials, products, and infrastructure; the minimization of energy consumption and the minimization of emission of greenhouse gasses and air pollutants by minimizing off-site disposal; and the anticipated use of native vegetation, which will require little or no irrigation.

12.2 Description of Remedial Components

The selected remedy consists of the demolition of all buildings and associated structures and materials; off-site disposal of asbestos and putrescible wastes; decontamination and recycling of any salvageable material; and on-site consolidation and soil cover.

- **Building Demolition** – All buildings and associated structures on-site will undergo controlled demolition. Although some of the office space and related structures may not contain significant levels of contamination, it would be more difficult, costly, and time consuming to attempt to demolish around them than to include them in the demolition plan. The structures to be removed include: the Rotary Kiln Buildings (A and B), the baghouse, the brick buildings, the steel buildings, and the above ground storage tanks. All accessible potential mercury containing items and polychlorinated biphenyl (PCB) containing items such as light ballasts, electrical capacitors and switching equipment and any other miscellaneous identified in the structure will be removed first and collected for proper disposal. In addition, all material found in the buildings will be sampled before the demolition; materials classified as RCRA hazardous waste will be segregated before they are temporarily consolidated and covered on-site, until they are addressed in the final remedial action.
- **Off-site Disposal of Asbestos Contaminated Material (ACM) and Putrescible Wastes** – An asbestos survey will be conducted for all on-site buildings before demolition activities begin. The results of the asbestos inspection will document

the presence and category of any ACM associated with the structures. Any ACM will be disposed of off-site at an appropriate disposal facility. During building removal all putrescible wastes will be segregated, consolidated, and sent off-site for appropriate disposal.

- **Recycling** – Any salvageable material will be recycled or reused. The extent of decontamination of the material will depend on the levels of residual contamination the recycling facility is permitted to accept. All material will be segregated by hazardous waste classification; the hazardous waste will be managed on-site, disposed of off-site, or recycled/reused. Decontamination will be done using decontamination pads, washing the materials, collecting the contaminated waste water and appropriately treating and disposing of all waste water. Material to be reused will depend on the market for available materials. The key materials to be recycled include steel, brick and concrete. Prior to demolition activities a processing area will be established where metal material will be processed into dimensions designated by the metal recycler. The steel will be processed using an excavator and afterwards the excavator will load the trucks. The steel will be transported to the metal recycling facility. Any proceeds will be used to offset the cost of the remedy.
- **On-Site Management Cell with Soil Cover** – All remaining demolition debris will be consolidated and placed in the southwest corner of the site. The consolidated debris will be placed under a temporary one-foot soil cover over a 1.4-acre by five-foot management cell. The soil cover will include a six-inch low permeability clay layer and a six-inch soil/vegetative layer. The vegetative layer will be made up of native vegetation. The soil cover will act as a physical barrier to the contaminated debris left on-site. No RCRA hazardous waste will be placed in the management cell. The soil cover will prevent direct contact and will limit potential for infiltration and leaching of lead from the material for the time it is staged prior to implementation of the final remedy. The limited maintenance associated with the soil cover will include six annual maintenance events over the course of five years or until the final remedial action begins.
- **Waste Management** – All non-hazardous waste will be managed onsite under the one-foot soil cover. Any RCRA hazardous waste will be placed on-site and managed consistent with RCRA waste pile requirements and incorporated with the final remedial action.

12.3 Summary of Estimated Remedy Costs

The information in this cost estimate summary table is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Major changes may be documented in the form of a memorandum in the Administrative Record file, an explanation of significant differences (ESD), or a ROD amendment. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of actual project cost.

Table 1: Cost Estimate Summary for the Selected Remedy

DESCRIPTION	QTY	Unit	COST	TOTAL
Building Demolition	1	LS	$2,279,091	$2,279,091
SUBTOTAL				**$2,279,091**
Putrescible Waste Disposal				
Transport	1,510	TN	$9.00	$13,590
Waste Disposal	1,510	TN	$35.50	$53,605
SUBTOTAL				**$67,195**
Steel Salvage Value				
Steel salvage	2,593	TN	-$280	($726,040)
1.4-Acre Temporary Cover Construction				
Rough Grading of Consolidation Area	6,776	SY	$4.96	$33,592
Fine Grading	6,776	SY	$1.00	$6,776
Low Permeability Clay Layer (6-inches thick)	1,129	CY	$22.15	$25,012
Vegetation Layer (6-inches thick)	1,129	CY	$37.20	$42,012
Seeding Vegetation Cover	1.4	AC	$4,846	$6,784
Cover O&M (POP 5-years, up to 6 events per year)	30.0	EA	$365.57	$10,967
SUBTOTAL				**$125,144**
On-site Landfill: Demo Debris Loading and Placement				
Handling and Loading	11,906	CY	$5.33	$63,502
Transport and Placement On-site Landfill	11,906	CY	$6.50	$77,389
SUBTOTAL				**$140,891**
Mobilization/Demobilization	5%			$130,616
Subcontractor General Conditions	15%			$391,848
SUBTOTAL				**$663,355**
Contingency	15%			$491,351
Project Management	6%			$226,022
Remedial Design	8%			$301,362
Construction Management	8%			$301,362
SUBTOTAL				**$828,746**
TOTAL CAPITAL COST (2008 Dollars)				**$3,869,733**

Key: LS (Lump Sum), TN (Ton), SY (Square Yard), CY (Cubic Yard), AC (Acre), EA (Each)

12.4 Expected Outcome(s) of the Selected Remedy

The demolition of the dilapidated and contaminated buildings is expected to prevent or abate actual or potential exposure to nearby human populations or animals from hazardous substances located in and on such buildings either from direct contact or from potential releases.

13.0 Statutory Determinations

Under CERCLA section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, attain Federal and State requirements that are applicable or relevant and appropriate for this remedial action (or invoke an appropriate waiver), are cost-effective, and utilize permanent solutions and alternative treatment technologies (or resource recovery) to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes.

13.1 Protection of Human Health and the Environment

The selected remedy will protect the potential trespassers and others who access the property and also potential future site workers, preventing direct exposure to and potential release of the high lead concentration in and on the buildings and associated structures. Protection will be achieved by a controlled demolition of the buildings with subsequent on-site management of the debris. A chain-link fence has already been installed (January 2009) around the property to limit site access and exposure to contaminated materials.

Institutional controls are already in place to prevent interference with the remedy and to help reduce and/or control the impact on human health by ensuring the integrity of the temporary soil cover.

13.2 Compliance with Applicable or Relevant and Appropriate Requirements

According to the NCP section 300.430 paragraph (f)(1)(ii)(C)(1), an alternative that does not meet ARARs may be selected if the alternative is an interim measure and will become part of the total remedial action that will attain the ARARs. The selected alternative is an interim measure and anticipated to be consistent with the final remedial action. All federal and any more stringent State ARARs identified for this interim remedial action will be met, unless, due to the interim nature of this remedy, they can't be met. All ARARs will be met in the final remedial action for the site. The tables below outline the ARARs associated with this interim remedial action.

Table 2: Federal ARARs

Requirement		Medium	Status	Type	Description	Action to be Taken to Attain Requirement
40 CFR 61.145	National Emission Standard for Asbestos	Air	Applicable	Chemical-Specific	Standards for control of asbestos emissions	Air monitoring and dust control during and after soil and debris moving
29 CFR 1910.120	Standards for Conducting Work at Hazardous Waste Sites	Health & Safety	Applicable	Action-Specific	Health and safety requirements for work at hazardous waste sites	Implement and follow health and safety plan
29 CFR 1926	OSHA Health/Safety Standards	Health & Safety	Applicable	Action-Specific	Health and safety requirements for workers	Implement and follow health and safety plan
40 CFR part 261	RCRA Identification and Listing of Hazardous Wastes	Hazardous Materials	Relevant & Appropriate	Chemical-Specific	Definition and identification of hazardous wastes	Appropriate sampling of debris and excavated material
40 CFR part 50	National Primary and Secondary Ambient Air Quality Standards	Air	To Be Considered	Action-Specific	Standards for emissions of regulated contaminants into air	Air monitoring and dust control during and after soil and debris moving
40 CFR Part 61	U.S. EPA Regulation on National Emission Standards for Hazardous Air Pollutants	Air	Relevant & Appropriate	Action-Specific	Standards for emissions of hazardous contaminants into air	Air monitoring and dust control during and after soil and debris moving
40 CFR Part 262	RCRA generator requirements	Hazardous materials	Relevant & Appropriate	Action-specific	Waste handling requirements	Appropriate handling of hazardous wastes during on-site activities and in preparation for any off-site disposal
40 CFR Part 263	RCRA transporter requirements	Hazardous materials	Relevant & Appropriate	Action-specific	Waste preparation, labeling and transportation requirements	Appropriate labeling and recordkeeping during any on-site preparation for off-site disposal of hazardous wastes.
40 CFR Part 264	General facility standards	Hazardous materials	Relevant & Appropriate	Action-specific	General facility standards	Materials handling practices and contingency planning consistent with facility standards

40 CFR Parts 122-124	Stormwater and wastewater discharge requirements	Water	Relevant & Appropriate	Action-specific	Stormwater management requirements for construction projects and waste water disposal requirements	Stormwater management activities, collection and sampling of wastewater from decontamination and appropriate on-site preparation for off-site wastewater disposal

Table 3: State ARARs

Requirement		**Medium**	**Status**	**Type**	**Description**	**Action to be Taken to Attain Requirement**
35 IAC Part 228	Asbestos	Air	Applicable	Chemical-Specific	Standards for control of asbestos emissions	Air monitoring and dust control during and after soil and debris moving
Ill. Environmental Protection Act ch. 111 ½, par.. 1009.1 (b)	National Primary and Secondary Ambient Air Quality Standards	Air	To Be Considered	Action-Specific	Standards for emissions of regulated contaminants into air	Air monitoring and dust control during and after soil and debris
Ill. Environmental Protection Act ch. 111 ½, par.. 1009.1 (b)	National Emission Standards for Hazardous Air Pollutants	Air	Relevant & Appropriate	Action-Specific	Standards for emissions of regulated contaminants into air	Air monitoring and dust control during and after soil and debris
35 IAC Part 721	RCRA Identification and Listing of Hazardous Wastes	Hazardous Materials	Relevant & Appropriate	Action-Specific	Definition and identification of hazardous wastes	Appropriate sampling of debris and excavated material
35 IAC Part 722	RCRA generator requirements	Hazardous Materials	Relevant & Appropriate	Action-Specific	Waste handling requirements	Appropriate handling of hazardous wastes during on-site activities and in preparation for any off-site disposal.
35 IAC Part 723	RCRA transporter requirements	Hazardous Materials	Relevant & Appropriate	Action-Specific	Waste preparation, labeling, and transportation requirements	Appropriate labeling and recordkeeping during any on-site preparation for off-site disposal of hazardous wastes.
35 IAC	General	Hazardous	Relevant &	Action-	General	Materials

Part 724	facility standards	materials	Appropriate	Specific	facility standards	handling practices and contingency planning consistent with facility standards
35 IAC Parts 302, 304 and 307	Stormwater and wastewater discharge requirements	Water	Relevant & Appropriate	Action-Specific	Stormwater management requirements for construction projects and waste water disposal requirements	Stormwater management activities, collection and sampling of wastewater from decontamination and appropriate on-site preparation for off-site wastewater disposal
35 IAC Part 808	Special Waste	Hazardous materials	Relevant & Appropriate	Chemical - Specific	Special Waste Classification and Handling	Appropriate sampling and on-site handling
35 IAC Part 620	Ground Water Protection	Ground water	To Be Considered	Chemical-Specific	Prohibits unacceptable impacts to ground water	Would be evaluated as part of the final remedy if ground water contamination increases due to releases of decontamination water

13.3 Cost-Effectiveness

U.S. EPA has determined that the selected remedy is cost-effective and represents a reasonable level of protectiveness for the money to be spent, especially considering the objectives of the interim action. In making this determination the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (NCP Section 300.430(f)(1)(ii)(D)). "Overall effectiveness" of those alternatives that satisfied the threshold criteria, (i.e. to be protective of human health and the environment and ARAR-compliance) was evaluated by assessing three of the five balancing criteria (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of this interim remedial alternative was determined to be proportional to its costs and hence this alternative represents a reasonable level of protectiveness for the money spent. The estimated present worth cost of the selected interim remedial action is $3,851,269.

13.4 Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

EPA has determined that the selected interim remedy utilizes permanent solutions and resource recovery technologies. All salvageable materials from the buildings will be recycled or reused. The remaining materials will be consolidated for temporary on-site management until the final remedy is selected. The remedy will utilize permanent remedies to the extent practicable, given the interim nature of the remedy.

13.5 Preference for Treatment as Principal Element

By decontaminating the recyclable/reusable material and appropriately treating and disposing of the decontamination water, the selected interim remedial action provides for treatment of some of the contamination. The preference for treatment of the remaining building debris and the other contamination at the site will be addressed in the final remedy (OU2). Principal threat wastes are not being addressed in this interim remedy.

13.6 Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

14.0 Documentation of Significant Changes

A Proposed Plan was released for public comment in May 2009. It identified Alternative 2, building demolition and on-site management of debris, as the Preferred Alternative for remediation. During the public comment period U.S. EPA discovered errors in the estimated costs of Alternatives 2 and 3. The recalculated costs show a significant increase for both Alternatives; and the cost estimates have increased roughly the same amount for both Alternatives. Because the No Action option is unacceptable and the cost increases for the acceptable alternatives were roughly comparable; these increased costs did not alter the U.S. EPA's rationale for preference of Alternative 2 as the Selected Remedy for the site.

Part 3: Responsiveness Summary

In accordance with CERCLA Section 117, 42 U.S.C. Section 9617, the United States Environmental Protection Agency (U.S. EPA) held a public comment period from May 18, 2009, through June 18, 2009, to allow interested parties to comment on the Proposed Plan *(May 2009)* for this site. The Proposed Plan identified the cleanup alternatives and preferred option for the final remedy at EZS in Hillsboro, Illinois. The Proposed Plan was issued by the U.S EPA, the lead agency, and the Illinois Environmental Protection Agency (IEPA). U.S. EPA, in consultation with the IEPA, has selected a final remedy for the site now that the public comment period has ended; and written and oral comments have been submitted and considered.

The purpose of this Responsiveness Summary is to document the Agency's responses to questions, concerns, and comments received during the comment period and during the public hearing. These comments and concerns were considered prior to selection of the interim remedial action for the site. A complete copy of the Proposed Plan, Administrative Record, and other pertinent information are available at the Hillsboro Public Library, 214 School St, Hillsboro, IL 62049 ((618)452-6238).

U.S. EPA received fourteen written comments on the Proposed Plan. Three of those commentors also provided similar oral comments at the public hearing and two others commented at the hearing. For purposes of this responsiveness summary, similar comments have been consolidated to avoid duplication.

1.0 Stakeholder Comments and Lead Agency Responses

Comment 1: One commentor expressed support for the U.S. EPA's efforts on the Eagle-Zinc Site cleanup, stating that environmental protection for humans, wildlife, and plants must be a high priority.
Response 1: The Agency, whose mission is to protect human health and the environment, appreciates the support of all interested parties.

Comment 2: The Mayor and City Council of Hillsboro, IL stated that while they prefer alternative three; U.S. EPA's preferred alternative is also acceptable as long as: (1) all consolidated debris remaining on-site is placed on the southwest corner of the property; (2) the final cleanup also specifies that any contaminated materials and soil that will remain on-site would also be consolidated in the southwest corner of the property to help maximize the amount of acreage available for redevelopment; and (3) U.S. EPA considers using native Illinois grasses for the debris pile coverage because it will reduce maintenance and provide protection and nesting areas for birds and small game.
Response 2: The selected interim remedy specifies that all remaining demolition debris will be placed under a soil cap in the southwest corner of the site. While the final remedial action has not yet been selected, U.S. EPA recognizes the City's preference that if any waste will remain on-site that it be consolidated on the south and southwest portions of the site. U.S. EPA expects to work with the City to maximize the

redevelopment potential of the property, while also assuring protection of human health and the environment. The Agency will consider using native grasses for the vegetation portion of both the temporary soil cover (to the extent one is feasible) and also for any final, long term cover that is part of the final remedy.

Comment 3: Another commentor also supported use of native prairie vegetation as part of the cap. The commentor noted that maintenance of the vegetative cover would involve an annual controlled burn. The commentor also noted that there is a stand of Indian Grass, a native grass, on the site and requested that the grass stand be preserved during cleanup activities. The commentor also asked if it would be possible to get U.S. EPA's permission to conduct a controlled burn of the Indian grass at the site.
Response 3: The Agency will consider using the native Indian grass or other native grasses for the vegetative portion of the cap. Conducting a burn on the current Indian grass on-site is not with in the scope of this remedy. However, in the future, the Agency will consider this request.

Comment 4: One commentor expressed a preference for alternative 3 but stated the most important thing is that the cleanup gets started as soon as possible without further delays.
Response 4: The Agency will begin the cleanup as soon as possible.

Comment 5: Seven other commentors also expressed a preference for alternative 3 over alternative 2. Those commentors all emphasized that taking all demolition debris off-site provided a more permanent and safer solution.
Response 5: The Agency understands the concerns for the safety of the Hillsboro residents. The interim remedy and fence around the site are intended to expedite protection from potential threats at the site even before a site-wide remedy is implemented. The temporary on-site staging of the building debris that cannot be recycled does not preclude U.S. EPA from deciding that some or all of that material should eventually be disposed of off-site. It does, however, allow U.S. EPA to make a final cleanup decision that manages all similar materials and similar contamination consistently and effectively. It also allows U.S. EPA to take advantage of efficiencies and cost savings that can be realized by handling and disposing of all of the (non-recyclable) contaminated materials all at once. This approach also may reduce the number of times and length of time that cleanup activities disrupt the community.

Comment 6: One of these commentors also felt the additional protection provided by Alternative 3 was worth the additional cost.
Response 6: The cost difference for off-site disposal of all of the material is significant. As the ROD explains, the cost differential and overall cost of Alternative 3 is even higher than originally anticipated. Much of the material involved is relatively low in toxicity and mobility. It may be much more cost effective to handle and contain this material safely on-site. If not, it will be more cost effective to dispose of all like materials off-site at the same time in the final remedy.

Comment 7: Two of these commentors also specifically expressed concern about the potential effect of the site on the sports complex located across Smith Road to the north

of the site. One of those commentors also noted that while the plant was in operation, they saw oxide dust blow across the road to that property. They asked whether there has been testing done on that piece of ground.
Response 7: Off-site samples taken by IEPA in the past do not indicate any soil contamination north of the property boundaries. Therefore, it is very unlikely that the sports complex has been negatively impacted from EZS. The runoff and soil concerns associated with Eagle Zinc are not a part of this interim remedy; any soil contamination or ground water contamination found to be associated with EZS will be addressed in the final remedial action.

Comment 8: The Montgomery County Economic Development Corporation (MCEDC) expressed a preference for alternative 3 because (1) it allows the entire site to be rid of toxic substances and available for reuse; (2) it takes the same amount of time as option 2, and (3) option 2 would place the waste piles near an existing rail spur and require 30 -35 acres. The MCDEC would rather see the entire site available for reuse.
Response 8: This interim remedy addresses only a limited area of the site. The building demolition materials will be moved (under the temporarily cover) to an area where other contaminated soil and material is located. All of this material will be addressed as part of the final remedy, and that area of the site is not yet ready for reuse. The final remedial action may require consolidation of the contaminated soil on-site in the same area as the 1.4-acre debris consolidation. If so, U.S. EPA will work with the City, the MCDEC, and other interested parties to identify and maximize the areas that will be available for redevelopment.

Comment 9: One of the commentors expressed concern that contaminants at the site could leach contaminants into the ground water in the years to come.
Response 9: The Agency understands your concern about the leaching of contaminants into the ground water and will ensure that any leaching issues concerning contamination at the site are addressed in the final remedy. The site investigations have not found significant contamination in the ground water, which is where leached materials would likely be present, especially since the site related contaminants have been exposed to infiltration for several decades. Ground water contamination appears to be present only at relatively low levels and only in a shallow water bearing zone that is not used or useful as a source of drinking water. Site-related ground water contamination also does not appear to have migrated off-site.

Comment 10: The commentor also felt U.S. EPA did not address all of the contaminants known to exist at EZS, but only focused on lead.
Response 10: The presentation on May 27, 2009 did not address all the contamination on-site because the only contaminant that is driving the interim cleanup/building demolition is lead. Lead has been found at unacceptable levels inside the buildings as well as on-site. Other contaminants on-site include zinc, with lesser levels of arsenic, iron, cadmium, and manganese. They will be addressed in the final site-wide remedy. This interim remedy only proposes to temporarily cover the lead-contaminated building debris under a1.4-acre by five-foot deep cell with a 12-inch soil cover. The interim remedial soil cover is considered temporary because the anticipated final remedial action

may require the rearrangement of the cell to include the consolidation of the other contaminated soils and residue piles on-site. The cover for the 30 -35 acre containment cell has not been decided and it may be more substantial than a one foot soil cover. Some of the materials may also be moved off-site.

Comment 11: One commentor expressed concern about the fresh water supply coming through and the potential contamination of the ground water via leaching. When it leaks into ground water it can contaminate wells and you won't have drinking water. If there is contamination of Shoal Creek it can affect area lakes. The commentor also wondered why U.S. EPA didn't mention the use of a liner under the contaminated lead debris and stated that the onsite management cell should not be so close to the middle fork of Shoal Creek.
Response 11: Fresh water and ground water are not within the scope of this interim remedial action. Any surface water or ground water issues will be addressed in the final remedial action. The majority of Hillsboro residents, if not all, are connected to a public water supply. Therefore, exposure to contaminants via drinking water is not likely. The Agency did not consider using a liner for the on-site management cell because it is not anticipated that the contaminants would leach. The Agency will not place any leachable material into the on-site management cell.

Comment 12: One commentor expressed hope that the pond water will be tested and monitored and that any realtor or builder knows about the contamination on-site.
Response 12: The Agency will implement additional institutional controls to ensure that any realtor or builder is aware of the contamination on the property.

Comment 13: One commentor suggested that much of the equipment found on-site is usable and asked that U.S. EPA consider selling the equipment to offset costs.
Response 13: The Agency will try to, and would prefer to, sell the equipment on-site for reuse rather than for scrap if buyers can be found for a reasonable price within a reasonable timeframe before demolition must begin.

Comment 14: One commentor asked what redevelopment of the northern part of the property is acceptable while the building debris is temporarily stored at the south end of the property.
Response 14: If areas at the northern end of the site are shown not to have unacceptable levels of contamination, either before or after the final remedy is selected and implemented, the Agency is willing to work with interested parties to see if redevelopment can move forward in a way that does not interfere with the permanent remedy. It may, however, be difficult to redevelop much of the site until the remedy construction is finished. The contaminants of concern in the soil for the entire site are lead and zinc, with lesser levels of arsenic, iron, cadmium, and manganese present in some areas. The contamination levels at the northern end of the site generally are low compared to the rest of the site.

Comment 15: The same commentor asked whether the site contamination is an issue concerning soils or whether it is more of a ground water issue.
Response 15: This interim remedial action does not address ground water on-site and addresses only a limited portion of soil contamination adjacent to the site buildings. Surface soil and manufacturing residues are the main concern for the final remedial action. The site investigations have not found significant contamination in the ground water. Ground water contamination appears to be present only at relatively low levels and only in a shallow water bearing zone that is not used or useful as a source of drinking water. Site-related ground water contamination also does not appear to have migrated off-site. The final remedy will fully consider ground water issues and will address any unacceptable ground water contamination.

Comment 16: The same commentor asked whether Brownfield funds could be available for redevelopment of the property.
Response 16: Brownfields funds are not used for reuse of sites cleaned up under the Superfund program; the law specifically prohibits it. EPA may be able to provide assistance with reuse planning. For more information about the Brownfields program please visit the following site. http://earth1.epa.gov/swerosps/bf/

Comment 17: One commentor noted that silt and "yuk" at the site have caused drainage problems that have flooded Smith Road.
Response 17: The drainage issue on the northern part of the Eagle Zinc property is not within the scope of this operable unit. However, the Agency is working with the property owner to grant the City access to the property so they can properly address the drainage problems causing the closure of the road.

Comment 18: One commentor was concerned about the soil west of the main shop area; stating that Eagle-Picher dug a ditch out of the west end of the main pond about 40 years ago to let all the acid out to run down the creek. The commentor asked what soil samples in that area showed.
Response 18: While this area will be addressed in the final remedy rather than in the interim action addressing the buildings, the Remedial Investigation included soil samples of that area. Those samples did not show any significant concentrations of the chemicals, including acid, which may have been used in plant operations. U.S. EPA may decide to conduct further sampling at the site before it makes its final site-wide cleanup decision. If the Agency finds exceedances in that area, it will take the appropriate measures to protect public health and the environment.

Attachment A

U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION

ADMINISTRATIVE RECORD
FOR
EAGLE ZINC SITE
HILLSBORO, MONTGOMERY COUNTY, ILLINOIS

UPDATE #1
AUGUST 21, 2009

NO.	DATE	AUTHOR	RECIPIENT	TITLE/DESCRIPTION	PAGES
1	00/00/00	U.S. EPA	File	Summary of Deposition Testimony Describing Use of Buildings at the Eagle Zinc Site w/Reference to Sample Points at or Near Buildings	4
2	00/00/00	U.S. EPA	File	Final Cost Estimate Summaries w/Building Debris Disposal Alternatives 1 and 2 for the Eagle Zinc Site	
3	00/00/00	U.S. EPA	File	Final Cost Estimate Summaries w/Building Debris Disposal Alternatives 3 and 4 for the Eagle Zinc Site	
4	00/00/00		File	Title 35: Environmental Protection, Subtitle G: Waste Disposal, Chapter 1: Pollution Control Board, Sub-chapter f: Risk Based Cleanup Objectives, Part 742 Tiered Approach to Corrective Action Objectives for the Eagle Zinc Site	
5	00/00/00		File	Regional Scoring Level Table Ind Soil April 2009 for the Eagle Zinc Site	
6	08/31/84	Lange, R., U.S. EPA	File	Preliminary Site Assessment Report w/Executive Summary for the Eagle Zinc Site	13
7	01/17/96	Illinois EPA	U.S. EPA	CERCLA Expanded Site Insection Report	
8	12/31/01	Muno, W., U.S. EPA	Respondents	Administrative Order by Consent for the Eagle Zinc Site (V-W-02-C-672)	58